

1 **MOTORIZED THREE DIMENSIONAL JIGSAW PUZZLE**

2 **FIELD OF THE INVENTION**

3 **1. Field of the Invention**

4 The present invention relates to a jigsaw puzzle, and more particularly to a
5 motorized three dimensional jigsaw puzzle having multiple substantially triangular
6 prisms each with multiple pieces detachably mounted on the side faces of the triangular
7 prisms such that the user has three different pictures to be presented when the jigsaw
8 puzzle is completed.

9 **2. Description of Related Art**

10 Normally a three dimensional jigsaw puzzle provides a single picture to be
11 presented after the pieces of the jigsaw puzzle are completed. Therefore, no matter how
12 the jigsaw puzzle is presented, there is only one message transmitted by the picture.
13 Further, due to the available space on the jigsaw puzzle, the message is short and thus
14 sometimes confusing when the jigsaw puzzle is used as a commercial bulletin.

15 To overcome the shortcomings, the present invention tends to provide an
16 improved jigsaw puzzle to mitigate the aforementioned problems.

17 **SUMMARY OF THE INVENTION**

18 The primary objective of the present invention is to provide an improved jigsaw
19 puzzle having multiple substantially triangular prisms connected to a motor such that
20 when the motor is activated, the triangular prisms are rotated and, therefore, different
21 pictures and/or messages are presented after the pieces of the jigsaw puzzle on the side
22 faces of the triangular prisms are completed.

23 Another objective of the present invention is that each of the triangular prisms
24 has multiple pieces detachably mounted on side faces of the triangular prisms and are

1 complementary to the pieces on an adjacent triangular prism such that when the
2 triangular prisms are aligned with one another in a particular position, different pictures
3 are presented.

4 Other objects, advantages and novel features of the invention will become more
5 apparent from the following detailed description when taken in conjunction with the
6 accompanying drawings.

7 **BRIEF DESCRIPTION OF THE DRAWINGS:**

8 Fig. 1 is perspective view of the jigsaw puzzle of the present invention;

9 Fig. 2 is an exploded perspective view of one triangular prism set of the jigsaw
10 puzzle;

11 Fig. 3 is an exploded perspective view showing the shapes of the pieces on the
12 triangular prisms;

13 Fig. 4 is schematic view showing the cross sectional structure of the triangular
14 prism to cope with the structure of the pieces;

15 Fig. 5 is a schematic cross sectional view showing the combination of the
16 triangular prism set and the transmission device;

17 Fig. 6 is a cross sectional view taking from line 6-6 in Fig. 1;

18 Figs. 7A, 7B and 7C are schematic views showing the rotation of the triangular
19 prisms of the present invention; and

20 Fig. 8 Fig. is an exploded perspective view of a different triangular prism set of
21 the jigsaw puzzle of the present invention.

22 **DETAILED DESCRIPTION OF THE PRESENT INVENTION**

23 With reference to Figs. 1 and 2, the motorized three dimensional (3D) jigsaw
24 puzzle constructed in accordance with the present invention includes a frame (1) and

1 multiple substantially triangular prism sets (2).

2 The frame (1) defines a space (11) to receive the triangular prism sets (2) therein.

3 Each triangular prism set (2) has a substantially triangular prism (20) and multiple

4 pieces (3). Furthermore, a transmission device (4) is provided on a bottom of the

5 triangular prism set (2).

6 The substantially triangular prism (20) has three side faces each having a groove

7 (21) defined along a longitudinal axis of the triangular prism (20). The pieces (3)

8 includes a top piece (31), a bottom piece (32) and mediate pieces (33). Each piece (3)

9 has at least one (two are shown in this embodiment) extension (34) formed on a face of

10 the piece (3) to correspond to the groove (21) of the triangular prism (20).

11 With reference to Fig. 3, the top piece (31) has a flat top side face (311)

12 corresponding to a top side face of the frame (1), two opposite tapered side faces (312)

13 and a bottom face (313) opposite to the flat top side face (311) and having a cutout (314).

14 The bottom piece (32) has a flat bottom face (321) corresponding to a bottom side face

15 of the frame (1), two opposite tapered side faces (322) and a top face (323) with a

16 projection (324) defined therein. One of the mediate pieces (33) adjacent to the top piece

17 (31) has a projection (331) corresponding to the projection (324) of the bottom piece (32)

18 and one of the mediate pieces (33) adjacent to the bottom piece (32) has at least one

19 cutout (332) corresponding to the projection (324) of the bottom piece (32). The rest of

20 the mediate pieces (33) have a configuration complementary to the adjacent mediate

21 piece (33) so that the mediate pieces (33) are able to be mutually combined. Furthermore,

22 the tapered side face feature not only applies to the top piece (31) and the bottom piece

23 (32), but also applies to each one of the mediate pieces (33).

24 With reference to Fig. 4, it is noted that with the tapered side face feature of each

1 of the pieces (3), when the laterally adjacent pieces (3) are assembled with the
2 substantially triangular prism (20) by the extension (34) being inserted into the
3 corresponding groove (21), the side faces of the adjacent pieces (3) are closely engaged
4 with one another to perfectly engage with the three side faces of the triangular prism
5 (20). That is, taking the pieces (3) in Fig. 4 as top pieces (31) for example: when the
6 three top pieces (31) are laterally combined, the tapered side faces (312) of one top piece
7 (31) are perfectly engaged with the tapered side faces (312) of an adjacent top piece
8 (31).

9 Referring to Fig. 2, as previously stated, the transmission device (4) is mounted
10 at bottom ends of the triangular prisms (2). At a top end of each of the triangular prisms
11 (20), a first connection head (35) is detachably mounted on the top end of the triangular
12 prism (20) and has a pole (351) extending upward from a top face of the first connection
13 head (35) and three connection bosses (352) extending downward from a bottom face of
14 the first connection head (35) to correspond to three top openings (212) respectively
15 defined in a top end of each of the three side faces of the triangular prism (20) to
16 communicate with a corresponding one of the grooves (21). The bottom face of the first
17 connection head (35) abuts the flat side face (311) of each of the top pieces (31). The
18 transmission device (4) includes a second connection head (41) with three bosses (411)
19 formed on a top face of the second connection head (41) to correspond to three bottom
20 openings (213) which are defined in the bottom end of the triangular prism (20) to
21 communicate with the three grooves (21) and a first gear (412) integrally formed on a
22 bottom face of the second connection head (41). After the bosses (411) are inserted into
23 the bottom openings (213) of the triangular prism (20), the second connection head (41)
24 is securely connected to the triangular prism (20). A second gear is provided to mate

1 with the first gear (412) and a motor (414) is connected to the second gear (413) to
2 control rotation of the second gear (413).

3 With reference to Figs. 5 and 6, it is noted that after the poles (351) of the
4 connection heads (35) of the triangular prisms (20) are rotatably inserted into the space
5 (11) and the pieces (3) are detachably mounted on the triangular prisms (20), the
6 mutually meshed first gears (412) and second gears (413) will drive the respective
7 triangular prism (20) to rotate after the motor (414) is activated.

8 It is noted that the pieces (3) detachably mounted on the three side faces of each
9 of the multiple substantially triangular prism sets (2) so that there will be three different
10 pictures presented when each of the pieces (3) is provided with a pattern (as shown in
11 Fig. 2). Therefore, matching three pictures on the triangular prism sets (2) not only
12 increases the difficulty of the jigsaw puzzle of the present invention, but also after the
13 jigsaw puzzle is completed, the user can use the different pictures to transmit messages
14 by the rotation of the triangular prism sets (2).

15 With reference to Fig. 7A, 7B and 7C and still using Fig. 6 for reference, it is
16 noted that when the motor (414) is rotated, the respective triangular prism (20) is rotated
17 such that the pictures composed of the patterns on each of the pieces (3) are also rotated.

18 With reference to Fig. 8, it is noted that the triangular prism (20) has holes (21')
19 defined in each of the side faces of the triangular prism (20) to correspond to projection
20 (31) formed on a rear side face of the piece (31').

21 It is to be understood, however, that even though numerous characteristics and
22 advantages of the present invention have been set forth in the foregoing description,
23 together with details of the structure and function of the invention, the disclosure is
24 illustrative only, and changes may be made in detail, especially in matters of shape, size,

1 and arrangement of parts within the principles of the invention to the full extent
2 indicated by the broad general meaning of the terms in which the appended claims are
3 expressed.